What is claimed is:

1. An organic semiconductor device comprising an organic semiconductor layer deposited between a first electrode and a second electrode which are facing each other, wherein the first and second electrodes are made of materials having different work functions with respect to each other.

2. The organic semiconductor device according to claim 1, wherein the organic semiconductor layer is a P-type semiconductor.

3. The organic semiconductor device according to claim 2, wherein the first electrode has a higher work function than the second electrode.

4. The organic semiconductor device according to claim 2, wherein the first electrode has a work function that is close to an ionization potential of the organic semiconductor layer.

5. The organic semiconductor device according to claim 4, wherein the first electrode has a work function within a range from -1eV to +1eV with a center of the range corresponding to an ionization potential of the organic semiconductor layer.

6. The organic semiconductor device according to claim 4, wherein the first electrode has a work function within a range

from -0.5eV to +0.5eV with a center of the range corresponding to an ionization potential of the organic semiconductor layer.

7. The organic semiconductor device according to claim 1, wherein the organic semiconductor layer is an N-type semiconductor.

8. The organic semiconductor device according to claim 7, wherein the first electrode has a lower work function than the second electrode.

9. The organic semiconductor device according to claim 8, wherein the first electrode has a work function that is close to an electron affinity of the organic semiconductor layer.

10. The organic semiconductor device according to claim 9, wherein the first electrode has a work function within a range from -1eV to +1eV with a center of the range corresponding to an electron affinity of the organic semiconductor layer.

11. The organic semiconductor device according to claim 9, wherein the first electrode has a work function within a range from -0.5eV to +0.5eV with a center of the range corresponding to an electron affinity of the organic semiconductor layer.

12. The organic semiconductor device according to claim 1, wherein the first and second electrodes are a source electrode

and a drain electrode, and the organic semiconductor layer is deposited such that a channel can be formed between the source electrode and drain electrode, and the device further includes a gate electrode which applies a voltage to the organic semiconductor layer provided between the source electrode and drain electrode.

13. The organic semiconductor device according to claim 12, wherein the device includes a gate insulator layer which electrically insulates the gate electrode from the source electrode and drain electrode.

14. The organic semiconductor device according to claim 13, wherein the source electrode and drain electrode are both provided on one side of the organic semiconductor layer.

15. The organic semiconductor device according to claim 13, wherein the source electrode and drain electrode are respectively provided on opposite sides of the organic semiconductor layer with respect to each other so as to sandwich the layer therebetween.

16. The organic semiconductor device according to claim 1, wherein the first and second electrodes are a source electrode and a drain electrode, and the organic semiconductor layer is deposited in a layer thickness direction such that the source electrode and a drain electrode sandwich the layer therebetween,

and the device includes a gate electrode which is implanted within the organic semiconductor layer.

17. The organic semiconductor device according to claim 16, wherein the gate electrode implanted within the organic semiconductor layer has one of a lattice, comb, or rattan blind shape.